F. W. REESE.

BROOM MACHINE.

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1,130,765. **Patented Mar. 9, 1915.**

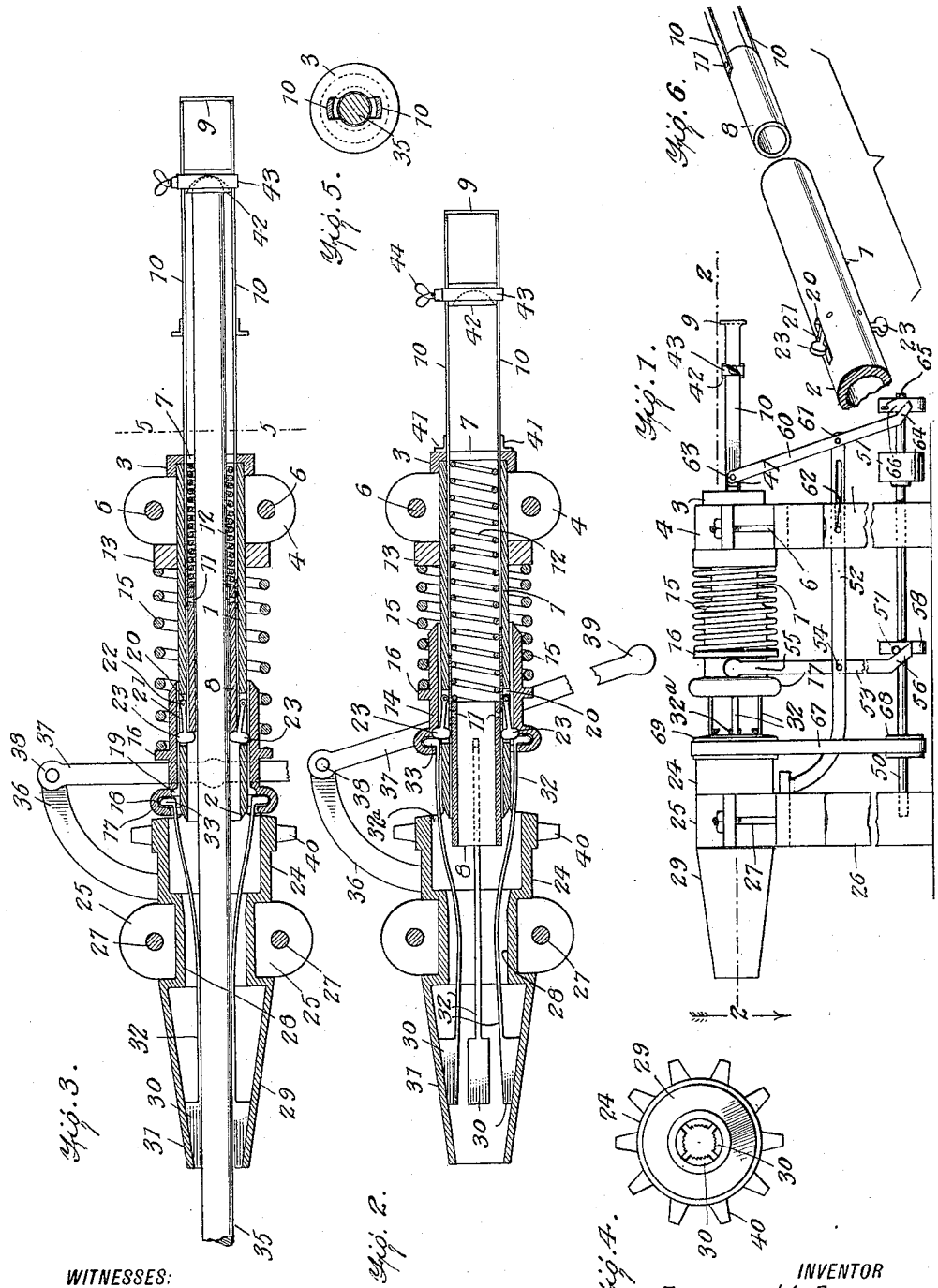


Fig. 3.

Fig. 2.

Fig. 5.

Fig. 1.

Fig. 6.

Fig. 4.

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BROOM-MACHINE.

1,130,765. Specification of Letters Patent. Patented Mar. 9, 1915.

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To all whom it may concern:

Be it known that I, FREDERICK W. REESE, a citizen of the United States, and a resident of Paris, county of Edgar, and State of Illinois, have invented certain new and useful Improvements in Broom-Machines, of which the following is a specification.

My invention is an improvement in broom machines, and consists in certain novel constructions and combinations of parts, hereinafter described and claimed.

The object of the invention is to provide a simple, easily operated machine of the character specified, for holding a broom handle during the formation of the broom, wherein a normally operative gripping device is held in inoperative position by a latch or other means, which is released by the insertion of the handle into the machine.

Referring to the drawings forming a part hereof, Figure 1 is a side view of the improvement. Fig. 2 is a vertical section of the improvement, on the line 2—2 of Fig. 1, with the parts in one position. Fig. 3 is a similar view with the parts in another position. Fig. 4 is an end view of the barrel. Fig. 5 is a section on the line 5—5 of Fig. 3, Fig. 6 is a detail perspective view of the case and shell, and Fig. 7 is a section on the line 7—7 of Fig. 2.

The present embodiment of the invention comprises a case 1 of cylindrical shape having one end beveled at 2 and provided at the other end with a cap 3. The case is supported in a sectional bearing 4, on the top of a standard 5, and the sections of the bearing are held together by bolts 6. The cap 3 is provided with a transverse slot 7, and a shell 8 is slidable in the case and is moved by means of a yoke having a body portion 9, and arms 10. The yoke is slidable through the slot 7, and the arms 10 are secured to the shell by rivets 11. A coil spring 12 is arranged between the cap and the adjacent end of the shell, and acts normally to press the shell away from the cap. A collar 13 encircles the case adjacent to the bearing 4, and a sleeve 14 is slidable on the opposite end of the case from the collar, and is normally pressed away from the collar by a coil spring 15 which encircles the case between the collar and an annular rib 16 on the sleeve. The sleeve is provided with an annular enlargement 17 at the end remote from the rib, forming an annular channel 18 at the end of the sleeve, and adjacent to the channel the inner surface of the sleeve is provided with oppositely arranged recesses 19.

The case 1 is provided in its wall with oppositely arranged slots 20, and a latch 21 is pivoted at 22 in each slot. Each latch is provided with a cross head 23, and in certain positions of the shell, the cross heads are adapted to be received in the recesses 19. When the shell and the sleeve occupy the position of Fig. 2, the latches are in their outward position, the heads 23 thereof being received in the recesses 19 of the sleeve, and the latches hold the sleeve from movement toward the barrel. When the sleeve is moved toward the barrel, the heads are forced inwardly. Before they can move inwardly, however, the shell 8 must first be moved toward the collar, in order that the heads 23 of the latches may be engaged with the end of the shell, as shown in Fig. 3. A barrel 24 is arranged in alinement and integral with the case, and the said barrel is supported in a sectional bearing 25, on the upper end of a standard 26. The sections of the bearing are held together by bolts 27. The barrel is provided with a reduced portion 28 for engaging the bearing and outside of the bearing the end of the barrel is tapering as shown at 29 in Figs. 1, 2 and 3.

A plurality of jaws 30 are arranged in the tapered portion, in spaced relation, each jaw having the face adjacent to the wall of the barrel inclined as shown at 31 to fit the said wall, and each jaw is provided with a stem 32. Each of the stems extends through an opening 32ª between the barrel and the case, and the free end of the stem is provided with a lateral lug 33, which is received in the channel 18 of the sleeve 14. When the sleeve 14 is moved longitudinally, the jaws are moved longitudinally of the tapered portion of the barrel, and the engagement of the outer inclined face of the jaws with the tapered surface of the barrel, moves the said jaws inwardly. The inner faces of the jaws are curved transversely, as shown at 34 in Fig. 4, to fit the outer face of the broom handle 35, and the jaws firmly clamp the handle to prevent any rotary movement thereof. A curved bracket arm 36 extends laterally from the bearing, curving toward the sleeve 14, and a lever 37 is pivoted to the arm at 38. The free end of the lever is provided with a grip 39, and the lever is connected to the sleeve 14 between the rib 16 and the enlargement 17. The in-

ner end of the barrel is provided with an annular series of spaced radial teeth 40, and the inward movement of the shell 8 is limited by lateral lugs 41 on the arms 10 of the yoke. The handle 35 extends through the slot 7, which is enlarged at its center as indicated in Fig. 1, to permit the passage of the handle, and an ejector in the form of a rest or stop 42 is provided for engagement by the end of the handle. The rest or stop is in the form of a block centrally recessed to fit the end of the handle, and is held on the yoke arms by means of a loop 43, encircling the arms, and held in adjusted position by a set screw 44.

The inner or engaging faces of the jaws are preferably corrugated to grip the handle more firmly. The said jaws are normally pressed into gripping position by the spring 15, which presses the sleeve toward the barrel. They may be locked in open position, by the shell 8, as indicated in Fig. 2.

In operation, with the parts in the position shown in Fig. 2, the handle is inserted, until the end thereof engages the stop 42, and presses the said stop toward the right of Fig. 1. The shell is then pressed toward the cap 3, until the latch heads are free to move inwardly. As soon as this occurs, the said heads hold the shell from reverse movement. The inward movement of the latches also releases the sleeve 14, which is then pressed toward the barrel by the spring 15, and the jaws 30 are pressed into close gripping relation with the handle. The stems 32 are resilient, and constrain the jaws to follow the inner surface of the tapered part of the barrel, so that as the said jaws are moved inwardly, they also move radially away from the handle.

To release the handle, the lever 37 is moved to the position shown in Fig. 2, thus moving the sleeve toward the collar, against the resistance of the spring 15. The jaws are moved into the barrel and away from the handle, and when the sleeve is in the position shown in Fig. 2, the spring 12 forces the shell toward the barrel, moving the latches outwardly, into the recesses 19, and locking the sleeve in the position shown in Fig. 2. The inward movement of the shell is limited by the lugs 41. The device is rotated by a sprocket chain engaging the teeth 40 of the barrel.

The barrel and the case, as before mentioned, are integral with each other, but the barrel is connected with the case by means of a shoulder and openings 32^a, through which the stems extend, are provided in the said shoulder.

The device will operate without the shell 8, the spring 12, the yoke 9—10, and the latch 23. The above mentioned parts are merely for locking the gripping jaws in open or closed position. The chief strain on the handle is rotary, owing to the strain of the wire being wound thereon.

In Fig. 1 is shown a means for automatically releasing the handle. The said means comprises a shaft 50 journaled on the standards 5 and 26, and provided at its outer end with a pulley 51 by means of which it may be rotated. A bracket 52 is arranged between the standards and a lever 53 is pivoted at 54 on the said bracket. The upper end of the lever is forked at 55, and the arms of the fork engage the groove formed between the channel 17 and the rib 16. The opposite end of the lever is provided with an angular portion 56, which is adapted for engagement with a pin 57 on a disk 58 secured to the shaft 50.

It will be evident that when the shaft 50 is rotated by means of the pulley 51, the lever 53, will be oscillated to intermittently move the sleeve in the opposite direction from the barrel, whereby to release the gripping jaws. This construction, it will be understood, will replace the operating mechanism comprising the bracket 36 and handle 37 shown in Figs. 2 and 3. A second lever 60 is pivoted at 61 on the end of the bracket 52 remote from the barrel, and the upper end of the lever is pivoted at 63 to the arms 10 of the yoke. The lower end of the lever is provided with an angular portion 64, which is adapted for engagement with a pin 65 on a disk 66 on the shaft 50. The shaft 50 is the power shaft, and is connected to the barrel by a belt 67 which connects a pulley 68 on the shaft 50 with a pulley 69 on the barrel, the said pulley taking the place of the sprocket teeth shown in Figs. 2 and 3.

The construction of the broom making machine proper shown in Fig. 1 is precisely the same as that shown in Figs. 2 and 3. The former construction is, however, a power machine, while the latter is a hand machine. After the broom has been completed, the sleeve 14 is moved toward the bearing 4. This movement releases the gripping jaws from the handle, and when the sleeve is in such position that the heads 23 of the latches may enter the recesses 19 of the sleeve, the shell 8 is released and the spring 12 forces the said shell toward the jaws. The stop 42 is also forced toward the jaws and the completed broom is ejected from the machine.

The bracket 52 in Fig. 1 is movable longitudinally, in order that the levers 53 and 60 may be shifted into and out of engaging position. During the winding of the wire on the broom, the bracket is shifted to move the levers out of engaging position, in order that the grip on the broom handle may be retained throughout the winding operation. After the broom has been wound, the bracket 52 is moved away from the barrel, to bring the levers 53 and 60 into position for en-

gagement by the pins of the respective disks. The pin on the disk 58 is in advance of the pin on the disk 66, so that the lever 53 is first operated to place the parts in the position of Fig. 2. The upper end of the lever is swung away from the barrel, thus moving the sleeve 14 away from the barrel, and moving the gripping jaws toward the large end of the portion 29 of the barrel, to release the broom. As soon as the broom is released, the spring 12 expands ejecting the broom from the barrel, and a new broom is immediately inserted. The pin 65 of the disk 66 now engages the lever 60, and moves the upper end thereof away from the barrel, thus placing the parts in the position of Fig. 3, and causing the gripping jaws to clamp the new broom and hold it for winding. The bracket 52 is longitudinally slotted, as indicated at 52ª, and the pin 62 moves in the slot, to permit the longitudinal movement of the said bracket.

I claim:

1. In a device of the character specified, means for gripping a handle, means for releasing the said gripping means, a latch for engaging the releasing means for holding the gripping means in inoperative position, a movable stop for engagement by the end of the handle, and means whereby the moving of the stop by the handle will release the latch.

2. In a device of the character specified, a releasable gripping device for holding a handle, a latch for restraining the action of the said device, means in connection with the said latch for engagement by a handle when the handle is inserted in the gripping device for releasing the latch to permit the gripping device to grasp the handle.

3. In a device of the character specified, a barrel for receiving a broom handle, a chuck having jaws for grasping the handle, a spring normally pressing the jaws of the chuck into engagement with the handle, a lever for releasing the jaws, a shaft journaled adjacent to the barrel, and a disk on the shaft having a radial pin for engaging the lever to operate the same.

4. In a device of the character specified, a releasable gripping device for holding a handle, means for holding the gripping device in inoperative position, a stop for engagement by the end of a handle, and a connection between the stop and the holding means for releasing the said holding means when the stop is moved away from the gripping device by the handle.

5. In a device of the character specified, a holder for broom handles or the like, comprising a barrel having a frusto-conical chamber for receiving the handle, gripping jaws within the chamber, each jaw having an inclined face for engaging the interior of the chamber to move the said jaws into and out of contact with the handle when the said jaws are moved longitudinally, a sleeve movable toward and from the barrel, resilient stems connecting the jaws to the sleeve, said stems normally holding the jaws in contact with the inner wall of the chamber, and means for moving the sleeve toward and from the chamber to operate the jaws.

6. In a device of the character specified, a rotatable barrel for receiving and holding a broom handle to permit the winding of wire upon the same during the rotation thereof, means for gripping the handle to constrain the same to rotate with the barrel, an ejecting device for ejecting the handle from the barrel, latch mechanism for alternately restraining the operation of the gripping device and the ejecting device, said latch mechanism being movable in opposite directions to alternately engage and hold in inoperative position the gripping device and the ejecting device, and means in connection with each of the said devices for holding the latch mechanism in engagemet with the other of the said devices when the said first-named device is in operative position.

7. A device of the character specified, comprising a barrel mounted for rotation and adapted to receive a broom handle, gripping jaws for gripping the handle to the barrel, means in connection with the barrel and the handle for moving the jaws into and out of engagement with the broom handle when the jaws and the barrel are moved longitudinally with respect to each other, a sleeve movable on the barrel to which the jaws are connected, means engaging the sleeve for moving the same toward the barrel to cause the jaws to grip the handle, means for moving the sleeve in the opposite direction, a shell movable in the barrel and having means for engaging the end of the handle remote from the gripping jaws, a spring normally moving the shell toward the jaws to eject the handle, latch mechanism for alternately engaging the sleeve and the shell to hold the same in inoperative position, the barrel having openings for receiving the latches, said sleeve and shell each acting when in operative position to hold the latches in engagement with the other.

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Witnesses:
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